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DEPARTMENT OF NATURAL RESOURCES
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TO: Daron Haddock, Permit Supervisor

FROM: Wayne H. Western, Reclamation Engineer

DATE: March 31, 1993 *W HW*

RE: Genwal Review, Genwal Coal Company, Crandall Canyon Mine,
ACT/015/032, Folder #2, Emery County, Utah

R645-301-512. Certification

Applicant's Proposal:

All maps, cross-sections, designs, and plans, as required will be prepared by, or under the direction of, and certified by a qualified, professional engineer or land surveyor.

Analysis:

The Applicant has committed to have all maps, cross-sections, designs and plans prepared by or under the direction of, and certified by a qualified professional engineer or land surveyor.

Plate 5-6 Truck Loadout has the words "*certified drawing*" printed on it but has not been stamped by a registered professional engineer.

Plate 5-7 Rock Dust Silo has the words "*certified drawing*" printed on it but has not been stamped by a registered professional engineer.

Deficiencies:

1. Plate 5-7 Rock Dust Silo must be stamped by a registered professional engineer.
2. Plate 5-6 Crushing/Storage/Truck Loadout must be stamped by a registered professional engineer.

R645-301-513. Compliance With MSHA Regulations and MSHA Approvals.

Applicant's Proposal:

As required by MSHA, the surface of the mine site is inspected on a quarterly basis, as mandated by law, and on spot inspections as deemed necessary by the governing agency. All mine openings are inspected on a quarterly basis and/or more often if deemed necessary by MSHA.

Genwal Coal Company will comply with the requirements of both DOGM and MSHA regarding these facilities.

Analysis:

The Applicant has committed to comply with the requirements of both DOGM and MSHA regarding surface facilities.

Deficiencies:

1. None.

R645-301-514 Inspections

Applicant's Proposal:

All engineering inspections, except those described under R645-301-514.330, will be conducted by a qualified registered professional engineer or other qualified professional specialist under the direction of the professional engineer.

Analysis:

The Applicant has committed to have a professional engineer or other qualified professional under the direction of the professional engineer inspect the sediment pond on an annual basis. Quarterly inspections will be performed by a qualified person for appearance of structural weakness and other hazardous conditions, as specified in R645-301-330.

Deficiencies:

1. None.

R645-301-515
R645-301-515.100

Reporting and Emergency Procedures

Applicant's Proposal:

At any time a slide occurs which may have a potential adverse effect on public, property, health, safety, or the environment, Genwal will notify the Division promptly of the problem. If any examination or inspection of the sedimentation pond discloses that a potential hazard exists, the Division will be promptly notified of the hazards and of the remedial measures to correct such hazards.

Analysis:

R645-301-515.100 requires that the Applicant notify the Division by the fastest available means at any time a slide occurs which may have a potential adverse effect on public, property, health, safety, or the environment.

The Applicant also needs to state that they will comply with any remedial measures required by the Division. The current wording suggests that the Division will only be informed of the remedial measures taken by the Applicant.

Deficiencies:

1. The Applicant will change the wordings of the first sentence of Section 5.15.10 (Reporting a Slide) from *"promptly"* to *"by the fastest available means"*.
2. The Applicant will commit to comply with any remedial measures required by the Division.

R645-301-515.200

Impoundment Hazards

Applicant's Proposal:

If any examination or inspection discloses that a potential hazard exists, Genwal will promptly inform the Division of the finding and of the emergency procedures formulated for public protection and remedial action.

Analysis:

The Applicant left out the word "*action*" from the end of the sentence.

The Applicant did not address the procedures that would be taken if emergency procedures could not be formulated or implemented.

Deficiencies:

1. The Applicant will replace the word "*action*" with the phrase "*remedial action*".
2. The Applicant will state what procedures will be implemented in the event that a potential hazard exists and adequate procedures cannot be formulated or implemented.

R645-301-520	Operation Plan
R645-301-521	General
R645-301-521.100	Cross-sections and Maps
R645-301-521.110	Previously Mined Areas

Applicant's Response:

Plate 5-1, 5-2, 5-2A and 5-2B show the location and extent of past and present underground mining operations.

Analysis:

Plate 5-2 shows the Township but not the Range in which the mine is located. Plate 5-2's legend has the abbreviation L.B.A. which is not defined.

Plate 5-1 shows old working, lists unknown regions.

Deficiencies:

1. The Applicant will list both the Township and Range on Plate 5-2.
2. The abbreviation L.B.A. will be defined in Plate 5-2's legend.

R645-301-521.120

Existing Surface And Subsurface Facilities and Features

Applicant's Proposal:

The location of surface and subsurface man-made features within, passing through, or passing over the proposed permit area are combined on Plate 5-3. Other detail plans are shown on Plate 5-4, 2-2, 5-6, 5-7, 5-8, 7-4A and 7-6A.

Analysis:

Plate 3-1 Surface Facilities dated December 20, 1989 contains several features not listed on Plate 5-3, such as corrugated metal pipes and riprap.

Plate 5-6 Crushing/Storage/Truck Loadout has not been stamped by a registered professional engineer.

Plate 5-7 Rock Dust Silo has not been stamped by a registered professional engineer.

Plate 7-4A Sediment Pond Detail As Built the legend list small riprap and large riprap but does not define the two products.

Deficiencies:

1. The Applicant must include features such as corrugated metal pipes and riprap on Plate 5-3.
2. Plate 5-6 and 5-7 must be certified and stamped by a registered professional engineer.
3. Plate 7-4A will have the small and large riprap defined in the legend.

R645-301-521.130

Landowner and Right of Entry and Public Interest Map

Applicant's Proposal:

The owners of record of those lands both surface and subsurface, included in or contiguous to the permit area are shown on Plate 1-1. The permit area on which the applicant has the legal right to enter is shown on Plate 5-3.

Appendix 1-1, 1-2, 1-3, 1-4 and 1-5 shows the legal right of the Applicant to enter and begin coal mining and reclamation operations, and the measures to be used to ensure that the interest of the public and landowners that could be affected by the mining and reclamation operations are protected under R645-103-234.

Analysis:

The Applicant did not list the ownership of Section 36 and 2 on Plate 1-1. Those section are state leases and it is possible that the coal owner and surface owner are different.

Some of the lettering on Plate 1-1 is illegible because it is too small.

Neither Plate 1-1 or 5-3 show the entire permit area.

Deficiencies:

1. The Applicant will list the surface and subsurface owners for Section 36 and 2 on Plate 1-1.
2. The Applicant will increase the letter size as needed on Plate 1-1 in order to make all lettering legible.
3. The Applicant will show the complete permit boundary area on a plate and reference it in the text.

R645-301-512-140

Mine Maps and Permit Area Maps

Applicant's Proposal:

Plates 5-2, 5-2A, and 5-2B show the boundaries of all areas affected by mining operations. Plate 1-1 shows an additional proposed permit area that is, at this time, being evaluated under a Lease by Application by the United States Forest Service. Plate 5-3 shows the surface area within the permit that will be affected during the life of the mining operation.

Analysis:

Plates 5-2, 5-2A and 5-2B show the boundaries of all areas proposed to be affected over the estimated total life of the coal mining and reclamation operation.

The underground workings and the location and extent of areas in which planned subsidence mining methods will be used and which includes all areas where the measures will be taken to prevent, control, or minimize subsidence and subsidence related damage are not shown on the plates cited in 5.21.14 of the MRP

Deficiencies:

1. The Applicant will provide the Division with maps that show the underground workings and the location and extent of areas in which planned subsidence mining methods will be used and which includes all areas where measures will be taken to prevent, control, or minimize subsidence and subsidence related damage.

R645-301-521.160

Maps and Cross-sections of the Proposed Features for the Proposed Permit Area.

Applicant's Proposal:

Maps produced by Genwal will show the facilities, disturbed area, disturbed area boundary, explosive storage and point source discharge for their specific requirement. These maps are located with this application.

Analysis:

The Applicant has stated that all the maps that are required in this section are located in the MRP. The Applicant does not site what maps meet the requirements of this section. The Applicant states that these are map(s) that show the location of explosive storage facilities. An explosive storage facility is not shown on the surface facilities map.

Deficiencies:

1. The Applicant will list those maps that contain the information required under this section.
2. The Applicant will list the map(s) that show the location of the explosive magazines, if they exist. If the explosive magazines do not exist the Applicant will not refer to them in this section.

R645-301-521.170 Transportation Facilities Maps

Applicant's Proposal:

This application describes each road and conveyor system to be constructed and used by the Applicant as required by R645-301-527.

Analysis:

The Applicant has not stated what maps meet the requirement of this section.

Deficiencies:

1. The Applicant will list those maps that describe the roads and conveyor that are constructed, used, or maintained within the permit area.

R645-301-521.180 Support Facilities

Applicant's Proposal:

The Applicant has not addressed this section.

Analysis:

The Applicant needs to address this section.

Deficiencies:

1. The Applicant must address section R645-301-521.180.

R645-301-521.240 Mine and Permit Identification Signs

Applicant's Proposal:

The Applicant failed to address this section

Analysis:

The Applicant must address this section

Deficiencies:

1. The Applicant will address section R645-301-521.240.

R645-301-521.260

Buffer Zone Markers

Applicant's Proposal:

The perimeter of all areas affected by surface operations or facilities will be clearly marked.

Analysis:

The Applicant has met the requirements of R645-301-521.260.

Deficiencies:

1. None.

R645-301-521.270

Topsoil Markers

Applicant's Proposal:

Markers will be erected to mark where topsoil or other vegetation-supporting material is physically segregated and stockpiled as required under R645-301-234.

Analysis:

The Applicant has committed to meet the requirements of R645-301-521.270.

Deficiencies:

1. None.

R645-301-522

Coal Recovery

Applicant's Proposal:

The lower Blackhawk Formation of the Wasatch Plateau is known to contain two

minable seams in this general area. Those seam are the Hiawatha (the lower seam) and Blind Canyon (the upper seam). In March 1985 a drilling program was conducted in the area and the results indicated that the Hiawatha was the only local seam of minable thickness. Future drilling may be done to determine the feasibility of mining the upper seam, if the horizontal extent and mining conditions make mining the upper seam economically feasible. If the economics of mining the upper seam are present, plans will be developed and submitted to the proper agencies for approval.

Genwal will mine from rock to rock in areas where the coal is less than nine feet thick. To prevent waste rock disposal problems all attempts will be made to leave the rock in place. In areas where the coal is greater than nine feet thick top and bottom coal will be left for safety reasons.

Coal reserves will not be recovered in the following areas:

1. Areas where the coal thickness is less than five feet thick.
2. Solid coal barriers will be left to protect main entries from mined out panels.
3. Solid coal barriers will be left between particular panels for roof and floor protection.
4. When extreme hazardous conditions exist and personal safety is compromised, coal extraction could then be terminated in that area of concern.
5. Coal will only partially be recovered in areas under existing perennial streams within the specified angle of draw approved by the Division.

Analysis:

The Applicant intends to recover coal reserve in accordance with previously accepted methods.

Deficiencies:

1. None.

R645-301-523

Mining Methods

Applicant's Proposal:

Room and Pillar is the current mining methods. Retreat mining will be done in

accordance with the approved MSHA roof control plan. All pillars in the mine are expected to be pulled with the exception for barrier pillars and those needed for safety or economic reasons. Longwall mining may occur in the future.

The only seam that will be mined is the Hiawatha. Coal thickness ranges from 5.5 to 6.5 feet.

Pillar designs and related information are described in this section and Appendix 5-1 to 5-4.

Analysis:

On page 5-12 in the middle of the fourth paragraph the Applicant states "Assuming a uniaxial compressive strength of 2200 psi, a coal height of 6 feet, 20 foot wide entry development, and 70 foot square pillars, the resulting factor of safety is 11.7 within this area, very close to the value of 12, recommended in the SME Mining Engineering Handbook as described above". The value of 12 described in paragraph 2 of page 5-12 and page 13-104 of the SME Handbook refers to the ratio of pillar length to average coal thickness.

Deficiencies:

1. The Applicant will replace the term "factor of safety" with "ratio of pillar length to average coal thickness" in the forth paragraph on page 5-12.

R645-301-524

Blasting and Explosives

Applicant's Proposal:

There are no structures or dwellings within one mile of the mine permit area. All blasting will be done under the direction of a person trained, examined and certified as provided by 30 CFR 850 and applicable regulations of the State Industrial Commission.

The Applicant will post blasting signs, in accordance with R645-301-510. Signals audible within a half mile, will be given prior to and after the blast as outlined in R645-301-465.

The amount of explosives used within any 8 millisecond period will be determined with the following equation as outlined in R645-301-651.

Blasting will be done so as no fly rock will leave the permit area, where practical.

Analysis:

R645-301-510 is the introduction to the engineering section and does not relate to posting blasting signs. Regulation should not be cited unless they are relevant.

R645-301-465 and R645-301-651 do not exist.

The Applicant states that no fly rock will leave the permit area, where practical. The term where practical is vague and needs to be defined. The regulations do not permit fly rock from leaving the permit area.

Deficiencies:

1. The Applicant will cite the correct regulations. R645-301-510 is the introduction to the engineering section and does not directly pertain to any specific blasting requirements. R645-301-465 and R645-301-651 do not exist.
2. The Applicant will modify blasting procedure to insure that R645-301-524.633 are met. That regulation requires that flyrock traveling in the air or along the ground will not be cast from the blasting site - more than one-half the distance to the nearest dwelling or other occupied structure; beyond the area of control required under R645-301-524.530; or beyond the permit boundary.

R645-301-525

Subsidence

Applicant's Proposal:

The Applicant sites as reference material "Some Engineering Geologic Factors Controlling Coal Mine Subsidence in Utah and Colorado", Geologic Survey Professional Paper 969, by C. Richard Dunrud. 1976, "SME Mining Engineering Handbook", Volume 1, by Arthur B. Cummis and Ivan A. Given, 1973. Reference is also made to Peng which is assumed to be "Coal Mine Ground Control" by Peng and reference materials developed in the United Kingdom by Gentry and Abel which is assumed to be the 1975 National Coal Board study.

The maximum amount of vertical subsidence predicted by the reference material is 3.9 feet. The values were calculated by reducing the coal height by 20% which represents

the unrecoverable coal in the pillared areas (a six foot coal height was assumed due to lack of data), then multiplied by 70% to obtain the maximum possible vertical subsidence.

Subsidence induced horizontal movement that would create slope failure is not expected to occur along the escarpment because only limited coal outcrop occurs within the lease. Horizontal movement creating tension or compression cracks can not be projected due to the overburden thickness and lack of jointing density and attitude data along the surface rock exposures.

Analysis:

The Applicant assumed a coal seam thickness of 6 feet for a worst case scenario, however the mine plan calls for mining coal 9 feet or greater. The maximum subsidence amount would be 5 feet if a 9 foot coal seam is assumed.

Horizontal movement can be projected to the surface. The horizontal movement can not be used to accurately predict escarpment failures, however they can be used to help access risks. That information can be used to design mine layouts that reduce surface disturbances.

Deficiencies

1. The Applicant will replace the 6 foot coal seam with a 9 foot coal seam for the worst case subsidence scenario.

R645-301-525-100 Subsidence Control Plan

Applicant's Proposal:

The Applicant states that the subsidence control plan addresses the requirements of UMC 784.20 and UMC 817.121-.126. The plan is an amendment to the original application filed on Dec. 17, 1980.

There are no manmade structures, utility right-of-ways, and public or private resources necessitating protection from subsidence. The occurrence of subsidence will not produce material damage, diminution of value, or foreseeable use of lands. There is the possibility that some groundwater resources could be effected.

Other coal mines in the area have mined coal using similar methods without causing any substantial material damage.

Analysis:

The Applicant must either show that there is no potential for material damage or submit a subsidence control plan. The Applicant has demonstrated that there are no structures that could be damaged by subsidence. There is the potential for damage to natural resources, such as ground and surface water. The Applicant must therefore comply with all the requirements of R645-301-525.100 to R645-301-525.170.

Deficiencies:

1. The Applicant will replace the reference to the UMC 784.20 and UMC 817.121-126 regulations with the appropriate R645 references.
2. The Applicant must substantiate any and all claims that subsidence will not result in material damage or diminution of values of foreseeable use of lands.

R645-301-525.110

Description of Coal Removal Methods

Applicant' Proposal:

The reserve area will be mined in the room and pillar method. This method is described in Section 5.23 of this chapter.

Analysis:

The room and pillar mining methods have been evaluated under section R645-301-523.

The subsidence control plan was developed for a room and pillar mining operation. However, the Applicant stated in section R645-301-523 that mining methods used, or to be used, consist of room and pillar, and longwall. Subsidence due to longwall mining has not been addressed.

Deficiencies

1. The Applicant must commit not to conduct any longwall operations without

first having the Division approve a revised subsidence control plan which includes an evaluation of subsidence caused by longwall mining.

R645-301-525.130

Description of Physical Conditions

Applicant's Proposal:

The Applicant has shown cover thickness on Figure 5-6. The coal seam high is shown on Figure 5-7. Figure 5-8 shows the structure top.

Analysis:

The Applicant is required to provide the Division with depth of cover, seam thickness and lithology. The Applicant has provided the Division with an overburden and isopach map. Those maps have a scale of 1 inch equals 2,500 feet. That scale is inadequate and must be increased.

The term structure top is not defined.

The Applicant has not provided the Division with the lithology of the area.

Deficiencies

1. The Applicant will provide the Division with depth of cover and seam thickness maps that have scales no smaller than 1 inch equals 1000 feet.
2. The Applicant will define the term structure top and place it on Figure 5-8.
3. The Applicant will provide the Division with a lithologic description from the 500 feet below the Hiawatha seam to the highest point in the permit area.

R645-301-525.130

Measures to Prevent Subsidence

Applicant's Proposal:

In areas where mining may cause undesirable surface movement step will be taken to control or prevent subsidence. Those steps include:

1. Barrier pillars within the lease boundaries left intact to protect adjacent lands.
2. First mining only areas which depletes the potential chances of subsidence.
3. Use of a 20 degree angle of draw.
4. Protection of perennial streams using first mining directly under and within a 20 degree angle of draw of the stream.

Analysis:

The Applicant's current measures to prevent subsidence have been approved by the Division, the Forest Service and Bureau of Land Management.

Deficiencies:

1. None.

R645-301-525.140

Subsidence Monitoring

Applicant's Proposal:

The Applicant has committed to monitor subsidence by use of a Forest Service and Division approved aerial monitoring program.

The Applicant has agreed to provide the Division with:

1. Current mine maps and the area where second mining will occur.
2. The approximate dates when second mining will commence and terminate.
3. Monitoring dates.
4. The vertical and horizontal positions of all monitoring points and pins.
5. A visual subsidence/escarpment failure survey will be conducted at quarterly intervals at area where rockfall has taken place beneath escarpment areas visible from Huntington and Crandall Canyon for a period of two years after

development mining within those areas.

During pillaring under the escarpment visual subsidence/escarpment surveys will be conducted at weekly intervals.

In the event that escarpment failures occur above pillar recovery areas the operator shall immediately cease pillar recovery in those area and notify the regulatory authority.

Analysis:

The Division and the U.S. Forest Service have approved the aerial monitoring program. The Division has also accepted the Applicant's Proposal to supply mine maps and plans on an annual basis.

The Applicant's proposal to visually inspect the escarpment is inadequate to detect failure. A photographic record should be taken to document any substantial failures.

The Applicant stated that if an escarpment failure should occur then mining operation in the area would cease and the regulatory authorities be notified. Pillaring operation would not resume until specifically approved by the regulatory authorities. Under current monitoring programs it would be very difficult to determine if mining was the major cause of escarpment failure and what should be done to protect the public. The Applicant needs to monitor the escarpment with extensometer or other device so that the Division can assess the impact that mining has on slope failure.

The Applicant has not addressed those escarpments that are not visible from Huntington and Crandall Canyon.

Deficiencies:

1. The Applicant must keep a photographic or other permanent record of the escarpment and any slope failure.
2. Before the escarpment becomes part of the subsidence area the Applicant will install extensometers or other devices to determine what impact mining is having on escarpment stability.
3. The Applicant will submit an escarpment monitoring plan for those areas that are not visible from Huntington or Crandall Canyon.

R645-301-525.150

**A Description of the Anticipated Effects of Planned
Subsidence**

Applicant's Proposal:

The Applicant did not address this section.

Analysis:

The Applicant did not address this section.

Deficiencies:

1. The Applicant will address this section.

R645-301-525.160

Mitigation of Damages

Applicant's Proposal:

Genwal has consulted with the BLM and received their concurrence with the conclusions presented in this document, a copy of the BLM correspondence may be found in Appendix 5-9.

Displacement of wildlife due to subsidence may be minimal.

Springs within the potential subsidence limit are significant resources and must be protected. If during the monitoring of the springs, it is proven that mining activities have reduced the flow of any seep or spring in the area by 50% or more work will begin on an acceptable mitigation plan. In the event that subsidence negatively impacts grazing the effected parties will be compensated.

Analysis:

The Applicant has not placed any correspondence with the BLM in Appendix 5-9. Without that documentation it is impossible to verify that the BLM, or any other state or federal agency, has determined that no material damage or diminution of value or foreseeable use of lands is expected to occur. The Applicant did not present findings from the U. S. Forest Service or state agencies.

Deficiencies:

1. The Applicant will provide copies of the correspondence with the various state and federal agencies that show a determination was made that no material damage or diminution of value or foreseeable use of lands is expected to occur.

R645-301-525.200

Subsidence Control

Applicant's Proposal:

The Applicant will comply with all provisions of the approved subsidence control plan and will correct any material damage resulting from subsidence to surface lands. Repairs will be done to the extent technologically and economically feasible.

Analysis:

The Applicant's proposal complies with all regulations.

Deficiencies:

1. None.

R645-301-525.300

Public Notice of Proposed Mining

Applicant's Response:

At least six months prior to mining, or within the period approved by the Division, all owners and occupants of surface properties will be notified of the specific areas in which mining will take place.

Analysis:

The Applicant will notify all surface owners at least six months prior to mining.

Deficiencies:

1. None.

R645-301-526.
R645-301-526.100

Mine Facilities
Mine Structures and Facilities

Applicant's Proposal:

The Applicant describes the existing or proposed facilities.

Analysis:

The purpose of this section is to describe all structures and facilities that existed prior to the Applicant's mining operation. Facilities and structures that existed prior to the current operation and are not used by the Applicant are excluded from certain reclamation requirements.

Deficiencies:

1. The Applicant will state if there were any pre-existing structures or facilities.

R645-301-526.115

A compliance plan for each existing structure proposed to be modified or reconstructed for use in connection with or to facilitate coal mining and reclamation operations.

Applicant's Proposal:

The Applicant did not address this section.

Analysis:

The Applicant did not address this section.

Deficiencies:

1. The Applicant will address this section.

R645-301-526.116

The measures to be used to ensure that the interests of the public and landowners affected are protected if the applicant seeks to have the Division approve: Conducting the proposed

coal mining and reclamation operations within 100 feet of the right-of-way line of any public road, except where mine access or haul roads join that right-of-way; or relocating a public road.

Applicant's Proposal:

The Applicant did not address this section.

Analysis:

The Applicant did not address this section.

Deficiencies:

1. The Applicant will address this section.

R645-301-526.200. Utility Installation and Support Facilities.

Applicant's Proposal:

The Applicant has committed to comply with the requirements of this section.

Analysis:

The Applicant has agreed to comply with the regulations set forth in R645-301-526.200.

Deficiencies:

1. None.

R645-301-527 Transportation
R645-301-527.100 The plan must classify each road.

Applicant's Proposal:

The forest development road from Huntington Creek to the truck turn around area will be maintained as a primary road, in compliance with the road use permit issued by the

U. S. Forest Service. See Appendix 1-2 for post mining land use requests. The Forest Service access road is also a primary road and will be retained as part of the post mining land use. The road from the main pad area to the portal area is classified as a primary road.

The ancillary road to the upper pad area is utilized by service vehicles on a very limited basis. That road has been reseeded.

Analysis:

The Applicant states that the forest access road will remain as part of the post mining land use in accordance with the Forest Service Permit. The permit is located in Appendix 1-2. The USFS road use permit was dated Feb. 10, 1988. Permission was granted to the Applicant in a letter dated Nov. 30, 1988 from the USFS to retain the Crandall Canyon Road beyond the proposed life of mine. The road management objectives for the area would require some reclamation of the roadway from a 20 foot finished surface to a 14 foot finished surface, however the basic roadway template is to remain.

The USFS has stated that the road use permit was updated at the time the road was paved with asphalt. The new permit needs to be included in the mine plan.

Deficiencies:

1. The Applicant will include a copy of the updated special use road permit for the Crandall Canyon road in the MRP.

R645-301-527.200

The plan must include a detailed description of each road conveyor, and rail system to be constructed, used or maintained within the proposed permit area.

Applicant's Proposal:

The Applicant describes the conveyor system that consists of a 1200 ton/hr 48" belt and a primary and secondary crusher system. Coal entering the primary crusher is processed and sent directly to the 650 ton silo. From the silo it is weighted and loaded onto coal trucks. Coal entering the secondary system is crushed and then deposited onto a 3000 ton capacity storage pile. A loader transfer the coal to a 3rd hopper and crusher where it is conveyed to the coal trucks. See Plate 5-3.

Analysis:

Plate 5-3 does not show the 3000 ton capacity storage pile.

The Applicant failed to provide any information on road as required by section R645-301-527.200 through R645-301-527.220. Those sections require a detailed description of the road that includes a map, cross-sections, and road specifications.

The Applicant failed to provide a maintenance plan as required by R645-301-527.230.

The Applicant failed to provide the Division with a commitment that if a road is damaged by a catastrophic event, such as a flood or earthquake, the road will be repaired as soon as practical after the damage has occurred.

Deficiencies:

1. The Applicant will identify the 3000 ton capacity storage pile on Plate 5-3.
2. The Applicant will address section R645-301-200 through R645-301-527.220 as pertains to roads.
3. The Applicant will provide the Division with a maintenance plan describing how the roads will be maintained throughout their life to meet the design standards.
4. The Applicant will provide the Division with a commitment to repair the road in the event of a catastrophic event as required by R645-301-527.240.

R645-301-528

Handling and Disposal of Coal, Overburden, Excess Spoil and Coal Mine Waste.

R645-301-528.100

Coal removal, handling, storage, cleaning and transportation areas and structures.

Applicant's Proposal:

The Applicant refers to section R645-301-526.

Analysis:

Section R645-301-526 does not specifically state how the facilities covered in this section will be removed.

Deficiencies:

1. The Applicant will state how the facilities covered in this section will be reclaimed.

R645-301-528.200 Overburden

Applicant's Proposal:

The Applicant did not address this section.

Analysis:

The Applicant did not address this section.

Deficiencies:

1. The Applicant will address this section.

R645-301-528.300 Spoil, coal processing waste, mine development waste, and noncoal waste removal, handling, storage, transportation and disposal areas and structures.

Applicant's Proposal:

The Crandall Canyon Mine produces a run of mine product, thus no processing waste is produced. No development waste is produced, however small amounts of rock waste is generated in unexpected roof falls and overcast. That waste rock is disposed of on pillar lines or stored in areas that have been mined and no second mining is to be done. In the unlikely event either rock, development, and/or processing waste is encountered and the volume exceeds the capacity that can be disposed of along pillar lines Genwal commits to dispose the waste in a DOGM licensed disposal site. All waste disposal will be done in accordance with MSHA regulations.

Noncoal waste including, but not limited to, wood, paper, scrap metal, belting will be

disposed of underground on pillar lines where possible in accordance with MSHA regulations. No oil or grease will be intentionally disposed of underground. All solid waste brought to the surface will be disposed of in a trash container until the container becomes full, at which time the container will be transported to a State approved landfill.

Scrap metal and used equipment will be stored underground or on the surface next to the solid waste container until the material is sold to a scrap metal or used equipment dealer.

Sediment (excess spoil) removed from the sediment pond during the cleaning process will be either returned to the mine workings and disposed of in compliance with MSHA regulations or hauled to a DOGM licensed coal waste disposal facility.

Sanitary waste from the underground bathhouse is pumped to an underground holding tank. Periodically the underground tank will be emptied and the contents disposed of by a licensed contractor at a State Health approved disposal site.

Analysis:

The Applicant produces a run-of-mine product, which means that there is no coal processing waste. Noncoal waste such as wood, paper, scrap metal and belting will be disposed of underground on pillar lines where possible in accordance with MSHA regulations. No oil or grease will be intentionally disposed of underground. All solid waste brought to the surface will be disposed of in a trash container. The trash container will be emptied as needed and the material transported to a licensed facility.

Sediment pond waste will either be returned to the mine workings or hauled to a licensed coal waste disposal facility.

Deficiencies:

1. None.

R645-301-529

Management of Mine Openings

Applicant's Proposal:

Five portals have been placed on the Starpoint Sandstone in the Hiawatha coal seam. Four of the five portals are used while one is sealed. Underground access from all mine openings are controlled by the operator during working and nonworking hours. Due to

public access through the mine site a security person is located at the mine when mine personal are not present.

Permanent sealing of underground openings is discussed in Section 5.51 of this chapter.

Analysis:

The Applicant has described the portals. In the event of a temporary closure a security person will be located at the mine at all times.

The Applicant states that permanent sealing of underground openings is discussed in Section 5.51 of this chapter. There is no Section 5.51 in this chapter.

Deficiencies:

1. The Applicant will address portals sealing. If the procedure is not addressed in this section then the proper cross reference will be made.

R645-301-530

Operational Design Criteria and Plans

R645-301-531

General

R645-301-532

Sediment Control.

Applicant's Proposal:

The Applicant states that designs for sediment controls are presented in Chapter 7 of the MRP.

Analysis:

Chapter 7 of the MRP consists of 113 pages. The Applicant must make more specific cross references.

Deficiencies:

1. The Applicant must present specific cross reference between the R645-301-532 rules and Chapter 7.

R645-301-533

Impoundments

Applicant's Proposal:

The Applicant identifies the sedimentation pond as the only impoundment at the Crandall Canyon Mine. The design for the sediment pond are presented in Chapter 7. In Chapter 7 the pond designs are stated to be in Appendix 7-6.

Analysis:

Chapter 7 of the MRP consists of 113 pages and Appendix 7-6 is also quite large. There are no cross references between the R645-301-533 rules and Chapter 7 or Appendix 7-6.

Deficiencies:

1. The Applicant will cross reference the R645-301-533 rule with Chapter 7 and Appendix 7-6. The cross references will include, but not be limited to:
 - a. the minimum static safety factor
 - b. if the pond meets the size or other criteria of 30 CFR 77.216 or located where failure would be expected to cause loss of life or serious property damage
 - c. slope protection against surface erosion
 - d. protection against sudden drawdown.

R645-301-534

Roads

Applicant's Proposal:

The primary roads associated with the Crandall Canyon Mine have been located on the most stable available surfaces. They have been constructed and maintained according to Division standards. See Chapter 7 of this document for design criteria and drawings for drainage. See Section 5.27 for further information on these roads.

Analysis:

The Applicant's proposal is vague and broad. Chapter 7 is cited for the hydraulic information but there are no specific cross references. There is no information about static safety factors for embankments.

Deficiencies:

1. The Applicant will make specific cross references when not presenting the information required in this section.
2. The Applicant will show that all embankments have a minimum static safety factor of 1.3.

R645-301-535

Spoil

Applicant's Proposal:

See Section 5.28 of this chapter.

Analysis:

Spoil is defined as overburden that has been removed during coal mining and reclamation operations. The Applicant did not address the spoil disposal in Section 5.28.

Deficiencies:

1. The Applicant will address the requirements of this section.

R645-301-536

Coal Mine Waste

Applicant's Proposal:

See Section 5.28 of this chapter.

Analysis:

Coal mine waste is defined as coal processing waste and underground development waste. In Section 5.28 the Applicant states that only minor amounts of development waste will be generated and such material will be disposed of in pillar lines or stored in areas that

have been mined and where no second mining is to be done. The coal is shipped as run-of-mine, which means that coal processing waste is not anticipated from the Crandall Canyon Mine. All underground waste disposal will be done in accordance with MSHA regulations.

Should the volume of coal mine waste significantly increase the Applicant has committed to dispose of those materials in a DOGM licensed facility.

Deficiencies:

1. The Applicant must provide the Division with documentation that MSHA has approved the underground disposal methods for coal mine waste.

R645-301-537

Regrade Slopes

Applicant's Proposal:

If a slide should occur within the permit area the Applicant will notify the regulatory authority and comply with the remedial measures required by the regulatory agency.

Variances have been granted to Section UMC 817.1550-.176 as these sections infer 1:1 excavation slopes are unsafe and not acceptable in all materials.

A slope stability investigation was submitted by Delta Geotechnical Consultants and is included as Appendix 5-19. The geotechnical analysis determines that natural existing slopes have safety factors of 0.73, which means they should fail. Since the natural slopes have not failed that suggests that man-made slope are more stable than what the safety factors indicate.

Appendix 5-16 is a stability analysis of the storage pad (upper pad) at the Crandall Canyon Mine prepared by EarthFax Engineering, Inc.

Analysis:

The Applicant cited the UMC rules instead of the R645 rules. The Applicant has not referenced the exemptions granted by the Division for constructing steep slopes. The Applicant did not address the specific rules of the R645-301-537 section.

Deficiencies:

1. The Applicant will cite the R645 rules instead of the UMC rules.

2. The Applicant will submit copies of all exemption to the regulation that pertain to regraded slopes.

R645-301-540
R645-301-541

Reclamation Plan
General

Applicant's Proposal:

The Applicant has committed to seal and backfill all entry ways when no longer needed for mining operations.

Upon permanent cessation of mining operations the water supply well, MW-1, will be permanently abandoned in accordance with regulations promulgated by the Utah Division of Water Rights.

Analysis:

The Applicant has committed to seal and backfill all portals and seal the water supply well.

The Applicant has made no mention of section R645-301-541.300, which requires that all surface equipment, structures, or other facilities not required for continued underground mining activities and monitoring unless approved by the Division as suitable for postmining land use or environmental monitoring will be removed and the affected lands reclaimed.

This section list general reclamation goals. Specific requirements are covered in section R645-301-542.

Deficiencies

1. None.

R645-301-542
R645-301-542.100

Narratives, Maps and Plans.
Timetable

Applicant's Proposal:

All reclamation will commence with final grading. In September or October topsoil

will be redistributed, nutrients and soil amendments if needed will be added. Seeding, transplanting and mulching will then proceed when moisture conditions are optimal for planting and seeding.

Analysis:

The Applicant failed to include in the timetable several important reclamation steps such as, but not limited to, demolition and removal of surface structures, reclaiming the roadway, and earthwork.

Deficiencies:

1. The Applicant will include in the timetable all major reclamation operations, such as, but not limited to, demolition and removal, portal closures, road reclamation, and earthwork.

R645-301-542.200 to R645-301-542.320

Final Surface Configuration

Applicant's Proposal:

All affected areas will be graded and restored to a contour that is compatible with natural surroundings. All final grading will be done along the contour to minimize erosion and instability unless this operation becomes hazardous to the equipment operators. Backfilling and grading will proceed so as to eliminate or reduce the highwall. Refer to Plates 5-16, 5-17 and 5-17A.

Analysis:

The Applicant has not demonstrated that the approximate original contours can be achieved.

Deficiencies:

1. The Applicant must provide additional information demonstrating that the approximate original contours can be achieved.

R645-301-542.400

Bond Release

Applicant's Proposal:

Before seeking bond release Genwal will provide a description of all temporary structures to be removed and reclaimed, and all permanent sedimentation ponds, impoundments, and treatment facilities that meet the requirements of the R645 rules for permanent structures, have been maintained properly and meet the requirements of the approved reclamation plan for permanent structures and impoundments.

Analysis

The Applicant has committed to comply with the requirements of R645-301-542.400.

Deficiencies:

1. None.

R645-301-542.500

Timetable and Plans, Removal of Sedimentation Pond

Applicant's Proposal:

The only structures to remain after the mining operation will be the sedimentation system and all necessary diversions required to insure routing of all disturbed area drainage to the pond and diversions to maintain the integrity of the pond until requirements of R645-301-763.100 have been met.

Upon final cessation of mining the area will be reclaimed. Upon completion of the reclamation earthwork the sediment pond will be cleaned out. The sediment pond and associated control devices will be removed after criteria of R645-301-763.100 has been achieved. The sediment pond will then be reclaimed and revegetated according to the approved reclamation plan and the permanent runoff control system being completed.

Analysis:

The Applicant did not provide a timetable for sediment pond removal. The Applicant's plan for sediment pond removal is adequate.

Deficiencies:

1. The Applicant will provide a timetable for sediment pond removal.

R645-301-542.600

Roads

Applicant's Proposal:

The Forest Service Development Road from Huntington Creek to the Forest Service turn around will remain as part of the post mining land use in accordance with the Forest Service permit shown in Appendix 1-2. The Forest Service will also remain as part of the post mining land use.

All other roads used for the operation of the Crandall Canyon Mine, within the permit boundaries, will be reclaimed in accordance with R645-600 regulations.

Analysis:

The Applicant has stated that the Forest Service road will be retained. The sentence, *"The Forest Service will also remain as part of the post mining land use"* needs clarification.

The Applicant did not address sections R645-301-542.610 to R645-301-542.640.

Deficiencies:

1. The Applicant will clarify the sentence " The Forest Service will also remain as part of the post mining land use"
2. The Applicant will address sections R645-301-542.610 to R645-301-542.640.

R645-301-542.700 Final Abandonment of Mine Openings and Disposal Areas.

R645-301-542.710 Closure and Management of Mine Openings

Applicant's Proposal:

When no longer needed for mining operations all entry ways or other openings to the surface from the underground mine will be sealed and backfilled. The portals will be backfilled with soil and two rows of solid concrete blocks placed across each entry and then

backfilled to the surface and recontoured as shown on Plate 5-17. A drain will be placed in the western most portal.

Analysis:

The Applicant has described the general method for closing the portals. The Applicant should also include information on the removal of the bathhouse and other structures near the surface.

Deficiencies:

1. The Applicant will describe the procedures for removing the bathhouse and other underground structures near the entries.

R645-301-542.720 through R645-301-542.742 Disposal of Excess Spoil, Coal and Noncoal Mine Waste.

Applicant's Proposal:

All waste material generated from the removal of the structures will be removed from the property and sold as scrap or disposed of in the appropriate approved state disposal areas.

Analysis:

The Applicant did not identify the disposal site for any of the waste materials. The haulage distance between the mine site and the disposal area must be determined. Transportation of waste materials is a major cost associated with demolition.

Deficiencies:

1. The Applicant will identify the state approved disposal site that would accept the waste materials.

R645-301-542.800 Estimate of Reclamation Costs

Applicant's Proposal:

The Applicant estimated that the reclamation costs would be approximately \$130,000.

Analysis:

The Applicant estimated reclamation costs at \$130,000, which is a 51% reduction over the previous figure of \$268,000. The bond estimate omitted several key costs.

Deficiencies:

1. The Applicant must submit an accurate estimate of the reclamation costs.

R645-301-553

Backfilling and Grading

Applicant's Proposal:

Backfilling and regrading of disturbed lands has been committed to in order to restore all areas affected by surface operations as near as possible to the contour of the land prior to disturbance. Reclamation of affected areas, including revegetation is outlined in Section 817.111-117. All openings will be sealed as per the request of MMS letter.

The highwall above the coal stockpile area will be backfilled with as much material as is available. However, a substantial highwall will exist and a small flat spot will be left as a potential campsite.

Analysis:

The Applicant states that reclamation of affected areas including revegetation is outlined in Section 817.111-117. There is no Section 817.111-117 in the Applicant's Mine and Reclamation Plan. Chapter 8 deals with bond information, not reclamation plans.

The Applicant proposes leaving a highwall, but has not addressed the requirements for a variance from the approximate original contour restoration requirements as listed in Section R645-302-270 through R645-302-275.

Deficiencies:

1. The Applicant will replace the reference to Section 817.111-117 with the appropriate citation.
2. The Applicant must obtain a variance from the approximate original contours as outlined in section R645-302-270 through R645-302-275 or eliminate all

highwalls.

R645-301-560 Performance Standards

Applicant's Proposal:

All mining and reclamation operations at the Crandall Canyon Mine will be conducted in accordance with the R645 rules and this permit.

Analysis:

The Applicant has committed to comply with section R645-301-560.

Deficiencies:

1. None.

R645-301-820 Requirement to File a Bond

Applicant's Proposal:

The entire disturbed area at the Crandall Canyon mine is bonded. The disturbed boundaries of the Crandall Canyon mine site is shown on Plate 5-3 (the mine site) and Plate 2-2 (the three topsoil storage areas). The disturbed boundary configuration shown on Plate 5-3 was physically surveyed from known control monuments on April 3, 1992.

The current bond is filed on the form provided by the Division and is for an amount equal to or exceeding the bond amount previously determined under regulation R645-301-830. The current bond form and Reclamation Agreement are presented in Appendix 8-1.

Genwal proposes the type or bonding to be instituted for the mine life and reclamation monitoring period to be the entire performance bond for the entire term(i.e. five years plus a ten year liability period) dependent upon reclamation success beginning at the time of the last augmented seeding.

Analysis:

The Applicant has a bond or bonds that cover the entire disturbed area as required by

section R645-301-820.111

There are no incremental units as described in section R645-301-820.112 through R645-301-820.114.

The Applicant did not address R645-301-820.120 which requires that the operator will not disturb any surface area, seceding increments, or extend any underground shafts, tunnels or operations prior to acceptance by the Division of the required performance bond. The Applicant is under obligation to obey this regulation whether or not it is mentioned in the mine plan and reclamation agreement.

The Applicant has elected to have the bond cover the five year term of the permit plus a ten year liability period. This covers the requirements of R645-301-820.130

The current bond form is presented in Appendix 8-1. The type of bond shown in Appendix 8-1 is a surety bond.

Deficiencies:

1. None.

R645-301-830

Determination of Bond Amount

Applicant's Proposal:

The Applicant has provided the Division with a cost estimate for reclamation work in Appendix 5-20.

Analysis:

The cost estimate does not list all the building, structures, and pavement that must be demolished and removed. There were no estimates for hauling the waste material off site or disposing of it on site.

The Applicant used the Means Cost Estimating book to determine the earthwork costs. The Applicant did not supply the Division with the productivity studies that show assumption made in Means are valid for the mine site.

The earthwork proposed by the Applicant does not meet the regulations governing

restoration of the approximate original contours.

Deficiencies:

1. The Applicant must determine the demolition and removal cost for all structures, equipment, and pavements.
2. The Applicant must determine the cost of disposing of all waste material generated during the demolition process. The material can either be disposed of on site if regulations permit or in an approved landfill.
3. The Applicant will provide productivity studies that verify that the assumption made in the Means Cost Estimating book are valid for the mine site.
4. All earthwork computations must be must be based on restoring the area to the approximate original contours until such time that the Applicant receives a variance from those requirements.

R645-301-840

General Terms and Conditions of the Bond

Applicant's Proposal:

General terms and conditions as stated within R645-301-840 through R645-301-840.520 will be met by Genwal Coal Company.

Analysis:

The Applicant has agreed to comply with the general terms and conditions as stated within R645-301-840 through R645-301-840.520

Deficiencies:

1. None.

R645-301-850

Bonding Requirements for Underground Coal Mining and Reclamation Activities and Associated Long-Term Coal-Related Surface Facilities and Structures.

Applicant's Proposal:

The bond will remain in full force and extend until all reclamation, restoration, and abatement work under the permit has been completed, as outlined in the approved Mining and Reclamation Plan.

Analysis:

The Applicant has committed to comply the requirement of R645-301-850.

Deficiencies:

1. None.

R645-301-860
R645-301-860.100

Forms of Bond
Surety Bond

Applicant's Proposal:

The form of performance bond that will be submitted to the regulatory authority will be a surety bond (MR Form 5) as sent by the Utah Division of Oil, Gas and Mining.

Analysis:

This section describes the type of bonds. The Applicant has a surety bond that meets the requirement of this section.

Deficiencies:

1. None.

R645-301-870

Replacement of Bonds

Applicant's Proposal:

Equivalent coverage will be provided if Genwal replaces its current bond.

Analysis:

Applicant is in compliance.

Deficiencies:

1. None.

R645-301-880

Requirement to Release Performance Bonds

Applicant's Proposal:

Genwal commits to meet the requirements with R645-301-880.

Analysis

The Applicant has committed to comply with the requirements of R645-301-880.

Deficiencies:

1. None.

R645-301-890

Terms and Conditions for Liability Insurance

Applicant's Proposal:

A copy of Genwal Coal Company's certificate of liability is incorporated into Section 1-17 of Chapter 1 of this document, and in Appendix 8-1.

Analysis:

The Applicant has complied with this section.

Deficiencies

1. None.